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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/595,415	06/16/2000	Hitoshi Seki	9651/4017	1580

757 7590 09/24/2003

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CHICAGO, IL 60611

19
EXAMINER

AHMED, SHAMIM

ART UNIT	PAPER NUMBER
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1765

DATE MAILED: 09/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

09/595,415

Examiner

Shamim Ahmed

Applicant(s)

SEKI ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 July 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 June 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-2 have been considered but are moot in view of the new ground(s) of rejection.

Applicants argue that Mueller et al do not teach that the etching composition specifically etches copper at a uniform rate and also argue that controlling the etching rate of the etching agent is not of significant importance in Mueller et al.

In response the argument, examiner states that Muller et al's etching/polishing composition is exactly same as the instant invention and also Mueller et al discuss that the etching/polishing rate of the metal layer is controlled by maintaining the decomposition rate of the oxidizing agent in order to maintain an uniform rate (see the rejection below).

Applicants further argue that Kubotera et al no longer teach that the concentration range of the instant application overlaps the range disclosed by Kubotera.

In response to the argument, examiner states that Kubotera et al's range of about 10% is still overlaps the claimed range 10.01% because it has been held that about 10% allowed for concentrations slightly above 10% thus the ranges overlaps. See *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976).

Furthermore, It is noted that the claimed invention is an etching agent, not an etching process.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-2 and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Mueller et al (5,958,288).

Mueller et al disclose a composition for polishing or etching copper comprising an aqueous solution of an oxidizing agent, wherein the oxidizing agent is monopersulfate such as potassium hydrogen peroxomonosulfate (KHSO_5) (col.4, lines 26-31 and lines 66-col.5, lines 17).

Mueller et al also disclose that the concentration of the oxidizing agent is in the range of about 0.5 to about 50.0 weight percent (col.5, lines 18-20).

Mueller et al teaches the polishing rate of the metal layer is maintained at a substantially high rate by controlling decomposition of the oxidizing agent (col.7, lines 51-56).

Therefore, Mueller et al inherently teach that the copper layer is etched or removed at an approximately uniform rate.

As to claim 2, Mueller et al teach that an additive such as acetic acid can be added to the aqueous solution to stabilize the oxidizer (col.7, lines 43-48).

As to claim 17, Mueller et al inherently teach that the slurry composition is capable of selectively etched/removed because Mueller et al's etching composition is exactly same as the invented composition.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-2 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Condra et al (5,259,979) in view of Kubotera et al (4,297,436).

Condra et al disclose a process and a composition for micro etch cleaning of copper, wherein the composition comprises peroxygen compounds of preferred

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oxidizing agent such as sodium or potassium monopersulfate (KHSO₅) or sodium or potassium peroxydisulfate (col.1, lines 6-9 and col.6, lines 54-64).

Kubota et al also disclose the oxidizing agent is conventionally used in an amount of from about 0.01 to about 10% by weight of the etch-bleaching solution (col.13, lines 22-38).

So, Kubota et al teach that the concentration of the oxidizing agent of about 10% overlaps the claimed lower range of about 10.01% because it has been held that the claimed ranges overlap or lie inside ranges disclosed by the prior art is a prima facie case of obviousness. See *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976).

As to claim 2, Condra et al fail to teach the introduction of acetic acid and also fail to teach the concentration of the peroxycompound.

However, Kubotera et al disclose a composition of an etch-bleaching solution comprising oxidizing agent such as peroxy compounds and an organic acid such as acetic acid for promoting the etching action (col.13, lines 22-39).

Therefore, it would have been obvious to one skill in the art at the time of claimed invention to employ Kubotera et al's teaching into Condra et al's method for easily etching of copper by promoting the etching action as taught by Kubotera et al.

As to claim 17, modified Condra et al's composition is capable of selectively etching copper.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shamim Ahmed whose telephone number is (703) 305-1929. The examiner can normally be reached on M-Thu (7:00-5:30) Every Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine G Norton can be reached on (703) 305-2667. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Shamim Ahmed
Examiner
Art Unit 1765

SA
September 20, 2003

NADINE G. NORTON
PRIMARY EXAMINER

A handwritten signature in cursive script, appearing to read "Nadine", followed by a long, sweeping horizontal flourish.